MAQUET

Compressor Mini
Service Manual

CRITICAL CARE

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Notes

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1. Important

General

- This Service Manual is intended to give service personnel sufficient knowledge about the Compressor Mini to be able to diagnose any possible problem or failure and to identify which part or component that causes the problem or failure. The description is limited to a level, which allows the service personnel to track problems down to parts that are found in the spare part list.
- This Service Manual is also intended to give information how to perform preventive maintenance.
- Documentation for Compressor Mini consists of:
  - Compressor Mini – User's Manual
  - Compressor Mini – Service Manual
  - Compressor Mini – Installation Instructions
  - Compressor Mini, Alternative connections – Installation Instructions
- The Compressor Mini – User's Manual is an indispensable complements to the Service Manual for proper servicing.

Text inside a box is used to highlight important information.

- In addition to the Important information given here and in the related documents, always pay attention to applicable local and national regulations.
- Responsibility for the safe functioning of the equipment reverts to the owner or user in all cases in which service or repair has been done by a non-professional or by persons who are not employed by or authorized by MAQUET, and when the equipment is used for other than its intended purpose.
- Data on internal pressures are given in Pa (psi). Airway pressures are given in cm H_2O (Pa).

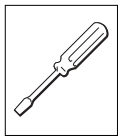
1 hPa = 1 mbar	1 mbar = 1 hPa
1 kPa = 10 mbar	1 mbar = 0.1 kPa
1 kPa = 0.01 bar	1 bar = 100 kPa
1 kPa ≈ 10 cm H_2O	1 cm H_2O ≈ 0.1 kPa
1 kPa ≈ 0.01 at	1 at ≈ 100 kPa
1 kPa ≈ 0.01 kgf/cm^2	1 kgf/cm^2 ≈ 100 kPa
1 kPa ≈ 0.01 kp/cm^2	1 kp/cm^2 ≈ 100 kPa
1 kPa ≈ 0.145 psi	1 psi ≈ 6.9 kPa

Symbols used in this manual

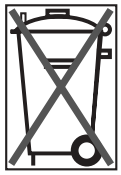
- **ESD sensitive components**. When handling ESD-sensitive devices, established procedures must be observed to prevent damage.

- **Technical training**. Refers to the Technical training supplied by MAQUET.

- **Service contract**. Refers to the Service contract supplied by MAQUET.



- **Special waste**. Discard disposable, replaced and left-over parts in accordance with appropriate industrial and environmental standards.



Abbreviations used in this manual

If not stated otherwise:

- The 115 V AC / 60 Hz version is referred to as the 115 V version.
- The 220 V AC / 50 Hz – 240 V AC / 50 Hz version is referred to as the 230 V version.

Software versions

- There are three different software versions released for the Compressor Mini:
  - SW version V1.1.0
  - SW version V1.2.0
  - SW version V2.1

  The information in this Service Manual is valid for all SW versions unless otherwise stated. The SW version list above is valid as from October 2004. For further information regarding the SW versions, refer to chapter 3. 'Description of functions' section 28. 'PC board'.

Installation

- Only personnel trained and authorized by MAQUET shall be permitted to install the Compressor Mini. The installation and handing-over procedures are described in the Compressor Mini – Installation Instructions.

1. Important

Functional check

- After any installation, maintenance or service intervention in the Compressor Mini, perform a 'Function check'. Refer to the User's Manual.

Hazard notices

- Before disassembling or assembling the Compressor Mini, make sure that the:
  - Power switch is set to Off.
  - Mains power cable is disconnected.
  - Gas supply is disconnected.
  - The system is cleaned according to instructions in the Compressor Mini – User's Manual, chapter 'Cleaning'.
- With mains power supply connected to the Compressor Mini, there are energized electrical components as well as moving mechanical parts inside the equipment. All personnel must exercise extreme caution when in the vicinity of this equipment if fault tracing or adjustments are performed with mains power supply connected and with the compressor cover removed.

- The Compressor Mini generates compressed air at a pressure of 450 kPa (64 psi). Do not attempt to connect or disconnect the compressed air line or service the compressor section while compressed air is being supplied. Do not direct the compressed air line toward the eyes or directly onto unprotected skin surfaces.

To the responsible service personnel

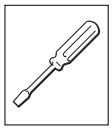
- The contents of this document are not binding. If any significant difference is found between the product and this document, please contact MAQUET for further information.
- We reserve the right to modify products without amending this document or advising the user.
- Only personnel trained and authorized by MAQUET shall be permitted to perform installation, service or maintenance. Only MAQUET genuine spare parts must be used. PC boards (spare parts) must always be kept in a package for sensitive electronic devices. MAQUET will not otherwise assume responsibility for the materials used, the work performed or any possible consequences of same.

- The device complies to standards and requirements as stated in the 'Compressor Mini – User's Manual'.

Service

- The Compressor Mini must be serviced at regular intervals by personnel trained and authorized by MAQUET. Any maintenance or service must be noted in a log book.

- It is recommended that maintenance and service is done as a part of a service contract with MAQUET.



- Preventive maintenance must be performed at regular intervals as follows:
  - At 5.000 hours of operation as described in this Service Manual, chapter 'Preventive maintenance'.
  - At 10.000 hours of operation as described in this Service Manual, chapter 'Preventive maintenance'.
- When working with ESD sensitive components, always use a grounded wrist band and a grounded work surface. Adequate service tools must always be used.

- The Compressor Mini is oil free, and oil *must not* be used when servicing the compressor.

- Discard all disposable, replaced and left-over parts in accordance with appropriate industrial and environmental standards.

1. Important

Environmental declaration

Purpose

This environmental declaration is for a Compressor Mini unit.

Number codes within brackets refers to the position number on each component in the Functional Block Diagram in chapter Diagrams.

Components with special environmental concern

Components listed below shall be disposed of in accordance with appropriate industrial and environmental standards.

Printed circuit boards

- Control board (28)

Other electronics

- Compressor with motor (2)
- Thermoelectric cooler with Peltier element (4)
- Standby valve (9)
- Drainage valve (12)
- Radial fan (16)
- Axial fan (18)
- Mains power inlet with fuses and On/Off switch (20-22)
- Mains power terminal (23)
- Transformer (24)
- Rectifier (25)
- DC Capacitor (26)
- Autofuse (27)
- Motor relay (29)
- Radial fan capacitor (30)
- Motor capacitor (31)
- Thermostat (32)
- Buzzer (33)
- Internal cabling

Construction materials

The construction materials used in Compressor Mini in % of the total weight.

Metal – total 43%

- Aluminum
- Steel
- Stainless steel
- Brass
- Copper
- Bronze
- Zinc (surface treatment)
- Chromium (surface treatment)
- Nickel (surface treatment)

Polymeric material – total 13%

- ABS (Acrylonitrile-butadiene-styrene plastic)
- PA (Polyamide)
- PE (Polyethylene)
- PET (Polyethylene terephtalate)
- PMMA (Polymethyl methacrylate)
- POM (Polyoxymethylene)
- PTFE (Polytetrafluoroethylene)
- PUR (Polyurethane)
- PVC (Polyvinyl chloride)
- CR (Chloroprene Rubber)
- EPDM (Ethylene Propylenendienmonomer)
- FPM (Fluoro Rubber)
- IR (Isoprene Rubber, Synthetic)
- NBR (Nitrile rubber)
- VMQ (Silicone)

Electronics – total 44%

- Printed circuit boards, cables etc.

Others – very small amounts

- Threadlocking adhesives
- Tape
- Corrugated cardboard
- Label
- Marking ink

1. Important

Articles of consumption

1. Compressor dust filter
2. Thermoelectric coolers dust filter
3. Air inlet filter
4. Water separator filter incl. O-ring
5. Compressor shock absorbers
6. Compressor maintenance kit incl:
   – Cylinder liners
   – Piston rings
   – Valve plates
   – Gaskets
   – O-rings
   – Misc. screws.

Items 1 – 4: Changed approx. every 5.000 hours.

Items 5 – 6: Changed approx. every 10.000 hours.

Power consumption

550 W at nominal voltage.

Noise level

Approximately 50 dB(A) at a distance of 1 m.

Packing materials

- Plywood
- Steel
- PE (Polyethyelene)
- PA (Polyamide)
- Corrugated cardboard
- Desiccator

2. Introduction

2.1 General description

The Compressor Mini is designed to supply medical-grade compressed air. The compressor has a capacity of approx. 30 l/min at a pressure of 350 – 450 kPa (50 – 64 psi).

The Compressor Mini can be placed on the ventilator cart to form a compact unit which is easy to move. It can also be used as a stand-alone unit.

The Compressor Mini is well insulated against noise and therefore does not cause disturbance when used during operations.

The Compressor Mini is equipped with a standby function. In the standby mode, the compressor will start to deliver compressed air if the hospital central gas supply fails.

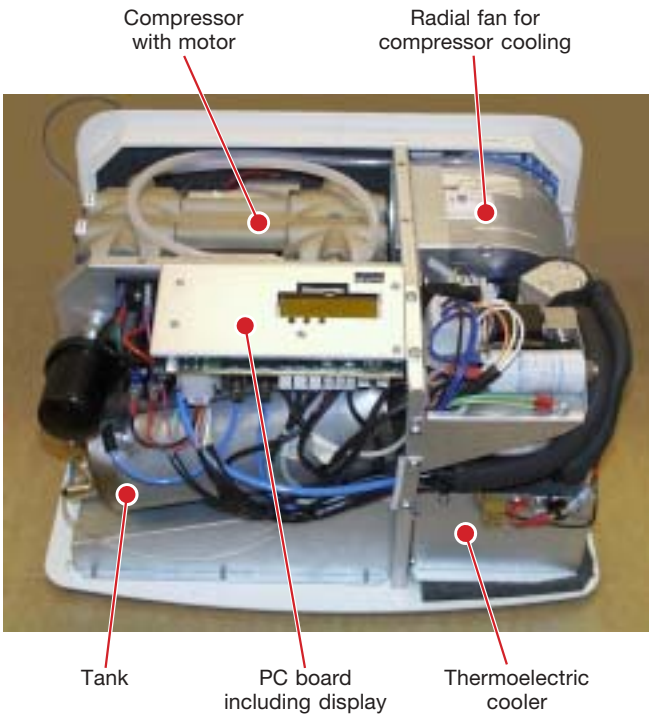
The Compressor Mini is fitted with temperature and pressure alarms. The temperature alarm is activated if the compressor should overheat or if there is a malfunction in the thermoelectric cooler.
The pressure alarm is activated if the air pressure in the compressed air tank is too high or too low.

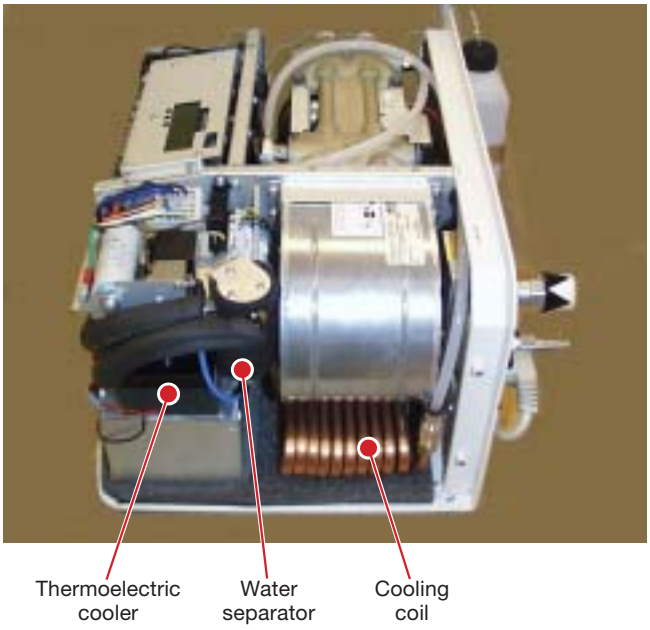
The Compressor Mini is available in two different versions; 115 V/60 Hz and 230 V/50Hz. With the exception of air connections and ratings of various electrical components, these versions are identical.

2.2 Main units

The Compressor Mini comprises the following main units:

- Compressor with motor
- Cooling coil
- Water separator
- Thermoelectric cooler including axial fan
- Tank
- Radial fan for compressor cooling
- PC board including display.





2.3 Functional principles

This description refers to the Functional block diagram, see chapter 9. 'Diagrams'.

Compressed air production

The dry and clean compressed air is produced as follows:

- Ambient air from the inside of the Compressor Mini is supplied to the Compressor with motor via the Air inlet with filter.
- The action of the compressor imparts heat to the compressed air. To provide preliminary cooling, the air flow is passed through the Cooling coil before it enters the Thermoelectric cooler. The cooling coil is cooled by the air stream forced through the unit by the Radial fan.
- In the Thermoelectric cooler, the air temperature is further lowered. Moisture that remains in the compressed air is then partly transformed into water by condensation. This water is separated from the air in the Water separator and routed to the Drainage bottle via the Drainage valve.
- A Pressure regulator is connected to the compressed air tubing. Air pressure in excess of the preset level on this pressure regulator, normally approx. 450 kPa (64 psi), will cause a flow which is fed back to the inlet of the compressor.
- The dried, compressed air is collected in the Tank and routed to the Compressed air outlet. The Tank is equipped with a Safety valve. If water, for some reason, is collected in the Tank, this water can be removed by manually pressing the Drain valve pin.
- Compressed air from the hospital central gas supply can be connected to the Compressed air inlet and the Compressor Mini can then be started in stand-by mode. The air pressure in the Compressed air inlet is monitored by a pressure sensor in Compressor Mini. If the hospital central gas supply fails, the compressor automatically starts to deliver compressed air. The Standby valve will switch between the Compressed air inlet and the Tank as compressed air source.

Compressor cooling

Efficient cooling is required to keep the specified working temperature inside the unit, but also to condensate water from the compressed air.

- The Compressor with motor is cooled by the air stream forced through the unit by the Radial fan and the two fans in the compressor. The cooling air is cleaned by a Dust filter mounted on the rear panel.
- The Thermoelectric cooler is cooled by the air stream forced through its Cooling flanges by the Axial fan. The cooling air is cleaned by a Dust filter mounted on the underside of Compressor Mini.

Electric functions

Mains power to the compressor is connected via and controlled by the On/Off switch which also includes mains fuses. A number of electric power supply functions (transformer, rectifier, capacitors, etc.) are mounted inside the unit. Internal mains power supply is distributed from the Mains power terminal.

Electrical control functions, the display and the indicator LEDs are located on the PC board.

Three Temperature sensors and two pressure sensors monitor the unit. The Buzzer (audible alarm) and the red alarm indicator LED is activated during temperature alarm and/or pressure alarm. The alarm will be silenced if the Compressor Mini is switched off.

Transport safety lock

The Transport safety lock, mounted into the rear panel, secures the Compressor with motor to the rear panel. This will relieve the load from the shock absorbers.

The Transport safety lock must be removed before starting the Compressor Mini.

3. Description of functions

The text in this chapter refers to the Circuit and connection diagrams and the Functional block diagram, see chapter 9. 'Diagrams'.

The number in each sub-heading refers to the position number on each component in the Functional block diagram.

3.1 Compressed air production

1. Air inlet with filter

The Air inlet with filter supplies ambient air from the inside of the unit to the Compressor with motor.

The filter is made of a felt, and must be replaced at the 5.000 hour overhaul as well as at the 10.000 hour overhaul. The filter must not be cleaned in any liquid.

2. Compressor with motor

The Compressor Mini is equipped with an integrated compressor and electric motor unit.

The electric motor is a single phase motor supplied with mains power. There are two different versions of the motor, one for 115 V and one for 230 V.

The motor is fitted with a self-resetting thermal switch that will cut the power supply to the motor if the temperature at the switch exceeds approx. 130°C (266°F). When the motor cools down, the thermal switch will automatically restart the motor.

> As motors fitted with a self-resetting termal switch can restart automatically, all personnel must exercise extreme caution when in the vicinity of this equipment if fault tracing is performed with mains power supply connected and with the compressor cover opened or removed.

The compressor is an oil free twin-cylinder assembly in which the filtered air is compressed by the action of the twin pistons. A manifold pipe is connected between the two cylinder heads so that the compressed air generated collectively by both pistons is available at a single outlet on one of the cylinder heads.

The compressor's capacity is at least a flow rate of 30 l/min at a pressure of 350 kPa (50 psi).

An overhaul of the compressor must be performed at the 10.000 hour overhaul.

3. Cooling coil

A preliminary cooling of the compressed air is provided by the Cooling coil assembly, which is made of metal tubing. The compressed air to this cooling coil is supplied from the compressor and the output is connected to the Thermoelectric cooler.

The Cooling coil is cooled by the air stream forced through the unit by the Radial fan. This air stream is then routed to the Compressor with motor.

4. Thermoelectric cooler

The Compressor Mini is equipped with a Thermo-electric cooler. The thermoelectric cooler is a self-contained unit including a 12 V Peltier element which has one cool side and one warm side.

The compressed air is supplied to the cool side of the Peltier element. When the temperature of the compressed air is lowered, moisture that remains in the air is partly transformed into water by condensation. This water is then collected in the Water separator connected to the outlet of the Thermoelectric cooler.

The temperature at the Peltier element is controlled by the PC board. The temperature sensor TS3, connected to the Peltier element monitors the temperature at the cool side of the element. To avoid formation of ice in the thermoelectric cooler, power supply to the Peltier element will be cut if the temperature drops below a specified limit.

The warm side of the Peltier element is equipped with Cooling flanges and is cooled by the air stream provided by the Axial fan. A thermostat mounted at the cooling flanges will cut the power to the Peltier element if the warm side is overheated, refer to section 32. 'Thermostat' below.

5. Water separator

The Water separator is a standard compressed air filter (5 microns) provided to filter the air as well as to separate water from the air. This water separator is connected to the outlet of the Thermoelectric cooler, and it supplies compressed air to the Tank (via a one-way valve).

Water separated from the air is collected in the metal bowl. The water separator is automatically drained at regular intervals by the Drainage valve, and the water is collected in the Drainage bottle.

The Water separator must be overhauled at the 5.000 hour overhaul as well as at the 10.000 hour overhaul.

6. Pressure regulator

The compressed air supply is tapped off at the Water separator and applied to the Pressure regulator. This device is actually a pressure relief valve.

Pressure in excess of the set level, normally approx. 450 kPa (64 psi), opens this relief valve. The excess compressed air flow is returned to the inlet of the compressor. This arrangement effectively silences the outlet of this relief valve.

7. Tank

The compressed air Tank is a metal container with a volume of approx. 1.25 liters. A Safety valve and a manual Drain valve is connected to the Tank.

8. Safety valve

A spring-loaded Safety valve is connected to the Tank. The valve will open if the pressure inside the tank exceeds approx. 700 kPa (102 psi).

9. Standby valve

The Standby valve is powered with 6 V and electrically controlled by the PC board. The standby pressure levels differ between the SW versions.

The Standby valve is a three-port valve with the following function:

1. If the air pressure in the hospital central gas supply, connected to the Compressed air inlet, is above approx.:
   • 300 kPa (44 psi) for SW version V1.1.0
   • 250 kPa (36 psi) for SW version V1.2.0 and V2.1
   the Standby valve connects this inlet with the Compressed air outlet. The compressor is in standby mode.
2. If the air pressure in the hospital central gas supply, connected to the Compressed air inlet, drops and stays below approx.:
   • 300 kPa (44 psi) for SW version V1.1.0
   • 250 kPa (36 psi) for SW version V1.2.0 and V2.1
   for more than 2 seconds, the compressor starts to supply compressed air to the Tank. At the same time, the Standby valve will switch to connect the Tank with the Compressed air outlet. The compressor runs in active mode.
3. If the air pressure in the hospital central gas supply, connected to the Compressed air inlet, rises and stays above approx.:
   • 350 kPa (50 psi) for SW version V1.1.0
   • 300 kPa (44 psi) for SW version V1.2.0 and V2.1
   for more than 30 seconds, the compressor stops. At the same time, the Standby valve will switch to connect the Compressed air inlet with the Compressed air outlet. The compressor returns to standby mode.

10. Compressed air inlet

Compressor Mini is equipped with a Compressed air inlet. The purpose of this air inlet is to provide compressed air from the hospital central gas supply via Compressor Mini when used as a standby unit.

The inlet nipple can be adapted to local standards. The inlet air connection nipple is provided with a M12 x 1 thread.

The standby function is further described in section 9. 'Standby valve' above and in the User's Manual.

11. Compressed air outlet

The Compressed air outlet is connected to the Tank via the Standby valve. The outlet nipple can be adapted to local standards. The outlet air connection nipple is provided with a M12 x 1 thread.

A test nozzle, provided as a service tool, can be used when performing functional checks or trouble-shooting on the Compressor Mini. It provides a simulated load that permits rapid, easy checks of the output pressure.

When testing the Compressor Mini, the test nozzle should be connected to this outlet so that compressed air flows through the nozzle. Output pressure can then be read on the display.

The test nozzle permits an air flow of approx. 30 l/min at 350 kPa (50 psi). An air pressure of 350 – 400 kPa (50 – 58 psi) indicated on the display shows that the compressor is operating correctly.

12. Drainage valve

The Drainage valve is powered with 12 V and electrically controlled by the PC board.

The purpose of the Drainage valve is to remove water collected in the Water separator at regular intervals.

The valve is closed in non-activated condition. During operation, the valve will be activated (open) for approx. 0.5 seconds twice every minute by the timing circuit on the PC board.

When the valve opens, the water collected in the water separator will be transported to the Drainage bottle.

13. Drainage bottle

The Drainage bottle collects the water that is extracted from the compressed air by the Water separator. It is a plastic container with a screw cap into which the water hose from the water separator is connected. There are ventilation holes in the cap.

14. Drain valve

The manual Drain valve is connected to the bottom of the Tank with a plastic tube. This valve is a spring-loaded valve that is provided to drain the tank if water, for some reason, collects in the tank. The valve pin must be pushed manually.

The Drain valve can also be used to decrease the internal air pressure e.g. during Function check or during troubleshooting of the unit.

3.2 Compressor cooling

15. Dust filter – compressor

This Dust filter, made of a synthetic material, is mounted on the rear panel of the unit. The purpose of this filter is to clean the cooling air forced through the unit by the Radial fan and the two fans in the compressor.

The filter must be inspected and cleaned regularly as described in the User's Manual, chapter 'Cleaning'. The filter must be replaced at the 5.000 hour overhaul as well as at the 10.000 hour overhaul.

16. Radial fan

The Compressor Mini is equipped with a Radial fan. The fan is supplied with mains power as long as the 29. 'Motor relay' is activated. There are two different versions of the fan, one for 115 V and one for 230 V.

The purpose of this Radial fan is to provide forced air cooling for the Cooling coil and for the Compressor with motor.

The forced cooling air stream provided by the Radial fan enters the unit via the 15. 'Dust filter' and exits via the outlet on the underside of the unit.

17. Dust filter – thermoelectric cooler

This Dust filter, made of a synthetic material, is mounted on the underside of the unit. The purpose of this filter is to clean the cooling air forced through the Cooling flanges of the Thermoelectric cooler.

The filter must be inspected and cleaned regularly as described in the User's Manual, chapter 'Cleaning'. The filter must be replaced at the 5.000 hour overhaul as well as at the 10.000 hour overhaul.

18. Axial fan

The Compressor Mini is equipped with an Axial fan. The fan is supplied with 12 V power supplied by the PC board.

The purpose of this Axial fan is to provide forced air cooling for the 19. 'Cooling flanges' of the Thermoelectric cooler.

The forced cooling air stream provided by the Axial fan enters the unit via the 17. 'Dust filter' and exits via the outlet on the underside of the unit.

19. Cooling flanges

The warm side of the Peltier element in the Thermo-electric cooler is equipped with Cooling flanges.

The purpose of these Cooling flanges is to lower the temperature in the Thermoelectric cooler and thus make the cooler work more efficient.

3.3 Electric functions

20. Mains power inlet

The mains power cable is connected to the Mains power inlet, a male connector mounted on the rear panel of the unit.

The Mains power inlet, the holder for the Mains fuses F3/F4 and the On/Off switch is one complete unit.

On the 115 V-version, the mains power cable must have a hospital grade plug.

21. Mains fuses F3/F4

There are two mains power fuses, F3 and F4.
The value for the mains fuses is as follows:

- 115 V version ..... 8.0 AT, 250 V
- 230 V version ..... 4.0 AT, 250 V

22. On/Off switch

The On/Off switch is the circuit breaker between the mains power fuses F3/F4 and the power supply to the rest of the unit.

23. Mains power terminal

Mains power from the On/Off switch is connected to the Mains power terminal and, from this terminal, distributed to the rest of the unit.

24. Transformer

The transformer used is a toroid transformer. The same transformer is used in the 115 V and 230 V versions, but the electrical connection of the transformer differs.

The transformer is fitted with a non-resetting thermal switch that will disconnect the current through the transformer if it is overheated.

25. Rectifier

The Rectifier is supplied with 12 V AC from the transformer. The output from the rectifier, approx. 15 V DC, is supplied to the PC board via the Autofuse F2. The rectifier consists of a rectifier bridge assembled as a complete, exchangable unit.

26. DC capacitor

The DC capacitor is a rectifer smoothing capacitor.

27. Autofuse F2

The Autofuse F2, rated 20 A, is connected to the rectifier output to protect the units DC circuit.

A button on the autofuse is used to reconnect the fuse if it blows.

28. PC board

The PC board controls most of the electric functions within the Compressor Mini. The PC board is protected by the 800 mAT fuse F1 connected to the board.

Note: Operating time and pressure calibration factors are stored on the PC board. These data will be lost when replacing the PC board.

There are two different versions of the PC board. The PC boards versions can be identified by the design of the cover plate, refer to illustrations below:

- Version A. Replaced in production and as spare part by Version B due to obsolete components. To be used with SW versions V1.1.0 and V1.2.0.

- Version B. To be used with SW version V2.1.

When delivered as spare part, the SW is always stored on the PC board.

The main functions of the PC board are:

Microprocessor

The PC board functions are controlled by a microprocessor. The microprocessor also contains memories e.g. for the software, for the operating time meter and for pressure calibration factors.

There are three different software versions released for Compressor Mini:

- SW version V1.1.0 intended for PC board of Version A.
- SW version V1.2.0 intended for field update of PC board of Version A. The update is performed with a software download tool.
- SW version V2.1 intended for PC board of Version B.

The main difference between the SW versions are the standby pressure levels. Refer to section 9. 'Standby valve' in this chapter.

The SW version list above is valid as from October 2004.

Display

The Display is the user interface of the unit. It shows e. g. operating mode, operating time, outlet air pressure and alarm messages. Refer to the User's Manual.

During startup, the SW version number is shown in the display.

Indicator LEDs

There are three Indicator LEDs:

- On/Off (green)
- Standby (yellow)
- Alarm (red)

The indicator LED functions are described in the User's Manual.

DIP switch

The DIP switch is a selector with 6 different switches. It is used to:

- Select air pressure unit shown on the display.
- Select language shown on the display.
- Activate service mode.

The different DIP switch settings are described in chapter 5. 'Service procedures'.

Voltage regulation and distribution

The different DC voltage levels used in Compressor Mini are regulated and distributed from the PC board.

The distributed voltage levels are:

- +12 V. Used by the termoelectric cooler, the axial fan and the drainage valve.
- +6 V. Used by the motor relay and the standby valve.
- +5 V. Used internally on the PC board.

Test points are described below.

Pressure monitoring

There are two pressure sensors mounted on the PC board, PS1 and PS2:

- PS1 is connected to the tank and measures the pressure inside the tank.
- PS2 is connected to the standby valve and measures the pressure in the compressed air inlet.

The pressure sensors are connected to their pressure sourses with tubes.

Low pressure alarm or High pressure alarm is activated if measured pressures are outside alarm limits. Alarm conditions are described in the User's Manual, chapter 'Technical data'.

Measured max. pressure value is stored in the memory and can be displayed in the Service mode.

Temperature monitoring

There are three temperature sensors mounted inside Compressor Mini:

- TS1 is mounted at the cooling air inlet on the rear panel. It measures the temperature of the ambient air.
- TS2 is mounted in the compressor compartment. It measures the temperature at the compressor.
- TS3 is mounted inside the thermoelectric cooler. It measures the temperature at the Peltier element.

The temperature sensors are connected to the PC board with cables.

Temperature alarms are activated if measured temperatures are outside alarm limits. Alarm conditions are described in the User's Manual, chapter 'Technical data'.

Measured max. and min. temperature values are stored in the memory and can be displayed in the Service mode.

Cooling control

The cooling control can be divided in two parts; cooling of the compressed air and cooling of the compressor.

Cooling of the compressed air: The temperature at the Peltier element inside the thermoelectric cooler is controlled by the PC board. Input data for this control is supplied by the temperature sensors TS1 and TS3. The PC board also controls the axial fan that provides forced cooling of the cooling flanges.

Cooling of the compressor: Cooling of the compressor is monitored by the PC board. Input data is supplied by the temperature sensor TS2.

Standby control

Compressed air from the hospital central gas supply connected to the compressed air inlet is monitored by pressure sensor PS2. As long as the pressure in the hospital central gas supply is within specified limits, Compressor Mini will remain in standby mode.

If the pressure drops below specified limit, the PC board will activate the motor relay and the compressor will start to produce compressed air.

If the pressure in the hospital central gas supply returns, Compressor Mini will return to standby mode.

If the internal pressure is above 200 kPa (29 psi) at startup, a 'quick-start' will be performed. Software version is not shown on the display, and the pixel and buzzer tests are excluded.

Conditions for the standby function are described in section 9. 'Standby valve' above and in the User's Manual.

Water drainage control

The drainage valve is controlled by the PC board.

To ensure a gentle startup, the drainage valve will be kept open a few seconds during the compressor startup.

During operation, the drainage valve will be opened for 0.5 seconds twice a minute. This is to remove water collected in the water separator and transport this water to the drainage bottle.

To ensure a gentle stop of the compressor, the drainage valve will be kept open a few seconds when the compressor is turned off.

Test points

For troubleshooting purpose, the PC board is equipped with a number of test points. The values stated below are referred to ground. Ground points (GND1–GND4) are available on the PC board.

- TP1 = Unregulated power supply, +11 to +16 V DC.
- TP2 = +6 V DC for power supply to motor relay and standby valve.
- TP3 = Unregulated power supply, +11 to +16 V DC fused by F1.
- TP4 = Vcc_5 V; +5,5 V DC for power supply to PC board circuits.
- TP5 = Vcc; +5 V DC for PC board backup power.
- TP6 = Vcc+12 V; +12 V DC for power supply to pressure transducer amplifiers.
- TP7 = 3.7–5.7 V DC constant power supply for display backlight.
- TP8 = Pressure sensor PS1 signal.
- TP9 = Pressure sensor PS2 signal.
- TP10 = +12 V DC for power supply to axial fan and drainage valve.

29. Motor relay

Power supply to the Compressor with motor and to the Radial fan is distributed via the Motor relay. The relay is supplied with a 6 V control signal by the PC board.

30. Radial fan capacitor

Start capacitor for the radial fan motor.

31. Motor capacitor

Start capacitor for the compressor motor.

32. Thermostat

The Thermostat is mounted in the compartment of the axial fan and the cooling flanges. If the temperature at the thermostat exceeds approx. 70°C (158°F), the thermostat will cut the power supply to the Peltier element. The power supply will be reconnected when the temperature drops below approx. 55°C (131°F)

33. Buzzer

The Buzzer will be activated during alarms. The buzzer is controlled by the PC board.

At power failure or when the unit is switched off, the buzzer will be activated during 12 seconds.

34. Transport safety lock

The Transport safety lock is mounted into the rear panel. The purpose of the transport safety lock is to secure and stabilize the Compressor with motor e.g. during transport of the unit. This will relieve the load on the motor mountings (shock absorbers).

Remove the transport safety lock before starting the unit. Keep the transport safety lock parked on the drainage bottle holder when not in use.

Before the compressor cover is removed, make sure that the mains power supply is disconnected and that the compressed air tank is depressurized.

With mains power supply connected to the Compressor Mini, there are energized electrical components as well as moving mechanical parts inside the equipment. All personnel must exercise extreme caution when in the vicinity of this equipment if fault tracing or adjustments are performed with mains power supply connected and with the compressor cover removed.

After any service intervention in the Compressor Mini, perform a 'Function check' according to instructions in the User's Manual.

4

4. Disassembling and assembling

4.1 General

- Only personnel trained and authorized by MAQUET shall be permitted to perform installation, service or maintenance of the Compressor Mini.
- All service associated with the Compressor Mini, including disassembly and assembly, is to be done in accordance with this Service Manual.
- This chapter describes the disassembling and assembling required to replace spare parts and to perform preventive maintenance.
- If not stated otherwise, the assembling procedure is the reverse of the described disassembling procedure.
- To avoid the possible spillage of water, before disassembling the Compressor Mini, run the unit until the drainage valve operates to drain water into the drainage bottle. Then remove the drainage bottle, empty the bottle and refit it.
- Wait for the Compressor Mini to cool down before proceeding.
- Locking compound is used on many of the screw connections. Further information can be found below in this chapter. Old locking compound must be removed and the threads must be cleaned before any new compound is applied.

4.2 Handling PC boards

- The PC board contains components that are highly sensitive to static electricity. Those who come into contact with circuit boards containing sensitive components must take certain precautions to avoid damaging the components (ESD protection).
- When working with ESD sensitive components always use a grounded wristband and grounded work surface. Adequate service tools must also be used.
- PC boards (spare or exchange parts) must always be kept in protective packaging for sensitive electronic devices.
- PC boards must not be inserted or removed while power is applied to the PC boards.
- Remove and insert the PC boards very carefully to avoid damage to the connectors.

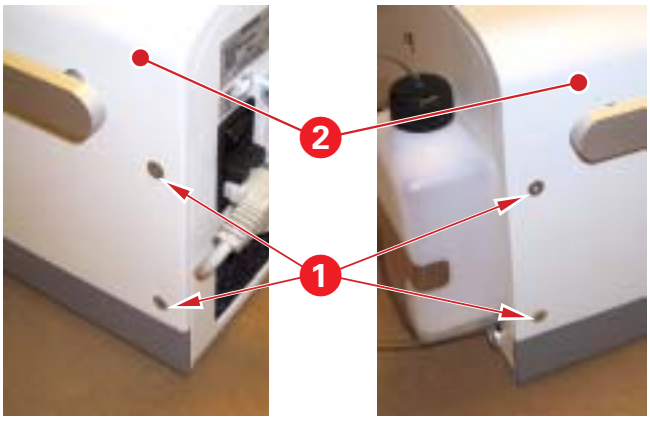
4.3 Tools

- Standard service tools.

4.4 Compressor cover

Disassembling

Before the compressor cover is removed, make sure that the mains power supply is disconnected and that the compressed air tank is depressurized.



- Remove the four screws (1).
- Pull out and lift off the cover (2).

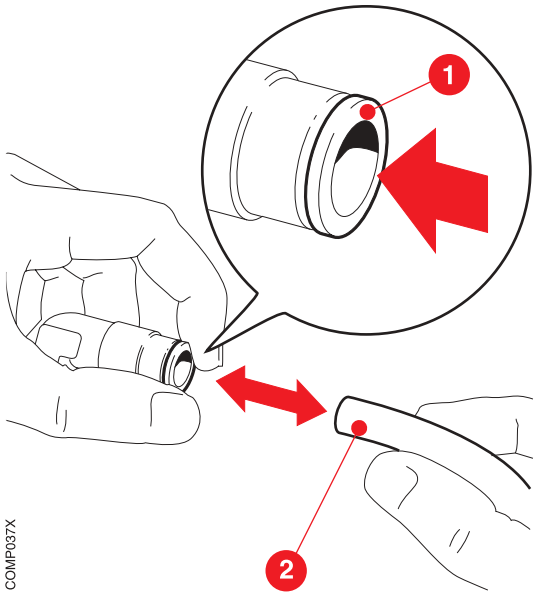
Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.

4.5 Internal tubing

The couplings used for the internal tubing (nylon tubes) are quick-action couplings. These couplings are used for compressed air tubes as well as for drain water tubes.

The tubes must be cut at a right angle and the ends of the tubes must be without burrs.



To disconnect a tube

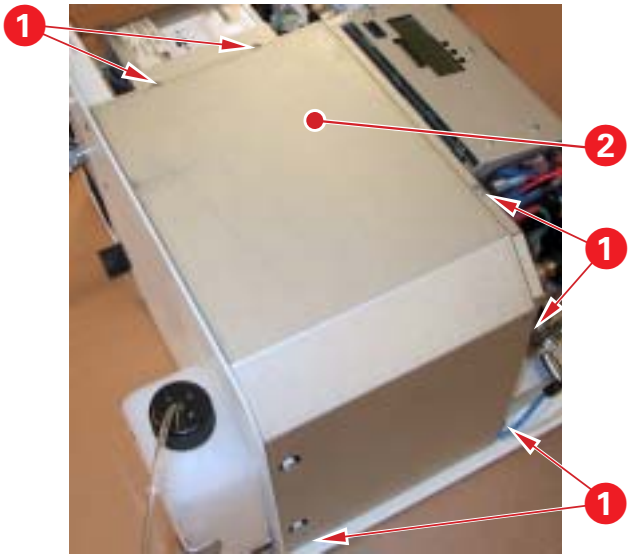
- Push in and hold the ring (1).
- Pull out the tube (2).

To connect a tube

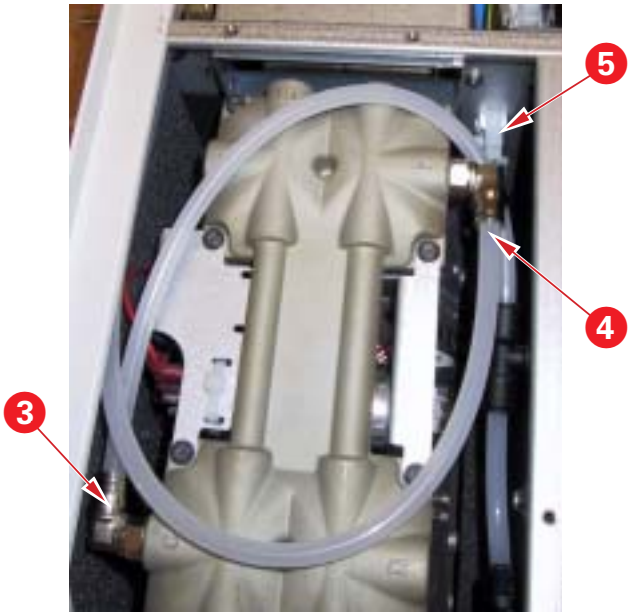
- Push the tube (2) into the coupling. Push the tube forcefully toward the stop inside the coupling.
- Pull the tube to make sure that it is secured to the coupling.

4.6 Compressor with motor

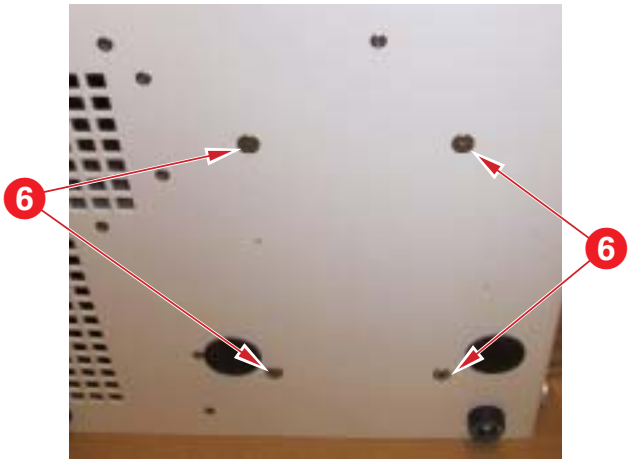
Disassembling



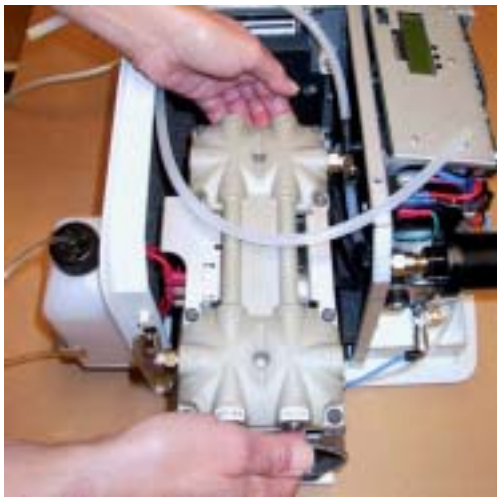
- Remove the cover as described in section 4.4 'Compressor cover'.
- Remove the six screws (1) holding the cover plate.
- Lift off the cover plate (2).

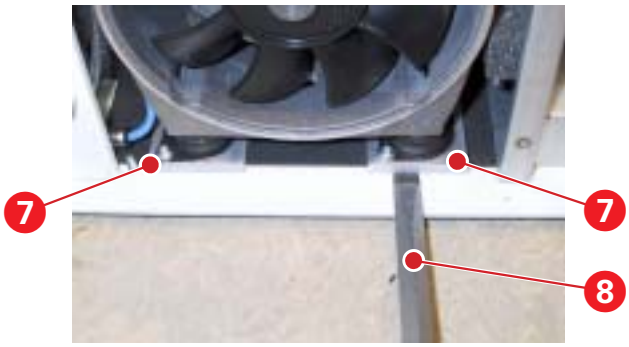


- Disconnect the two tubes (3 and 4).
- Disconnect the motor cable connector (5).



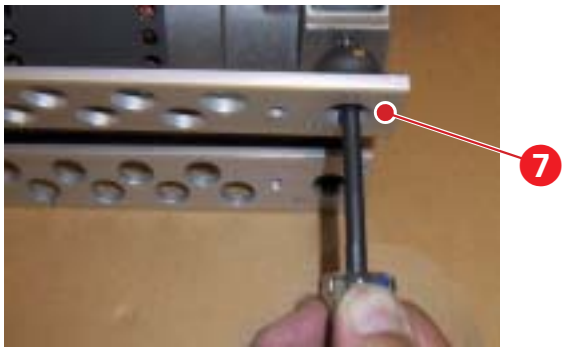
- Remove the four screws (6).



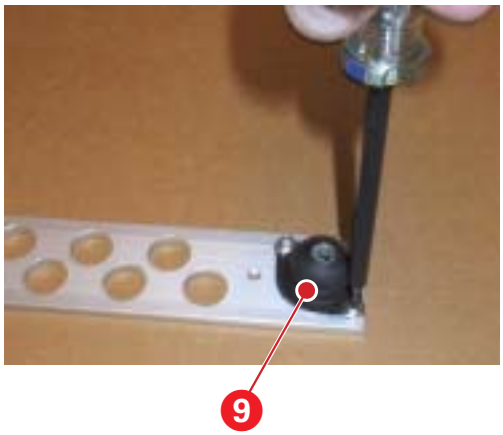


- Lift out the compressor with motor.

Note: The sound absorbing mat attached to the chassis may cause the mounting rails (7) to stick. Use a large screwdriver (8) to pry them loose.



- Remove the mounting rails (7) from the compressor.



- Remove the shock absorbers (9) from the mounting rails.

Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.

Locking compound (Loctite 243) must be used at:

- Screws holding the shock absorbers to the mounting rails.
- Screws holding the shock absorbers to the compressor with motor.
- Screws holding the mounting rails to the base plate.

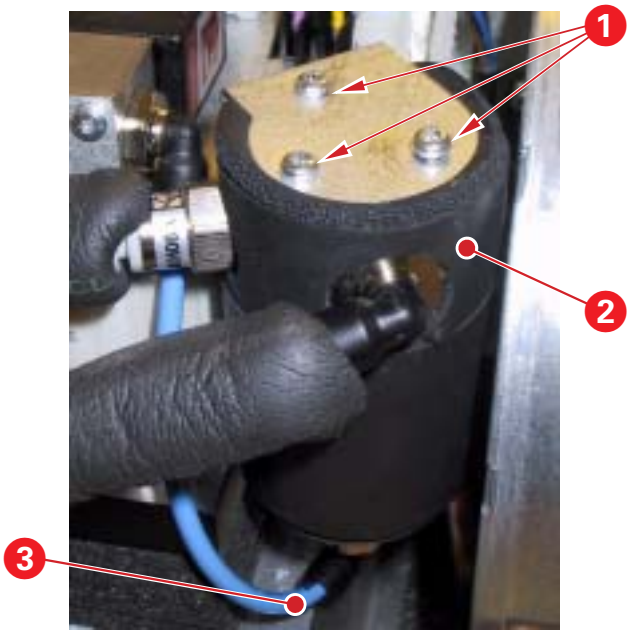
4.7 Compressor maintenance

The only spare parts available for the compressor with motor are included in the 'Maintenance kit, 10.000 hour'.

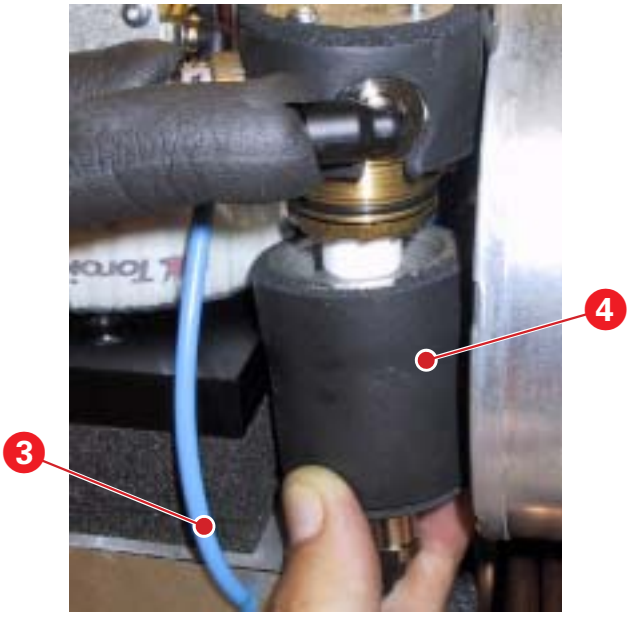
Detailed instructions for the compressor maintenance are enclosed in the maintenance kit.

4.8 Water separator

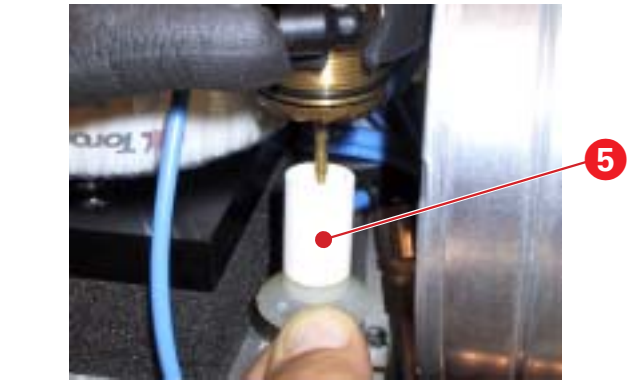
Disassembling



- Remove the cover as described in section 4.4 'Compressor cover'.
- To remove the complete water separator:
  - Remove the three screws (1).
  - Disconnect all tubings from the water separator and lift off the water separator (2).



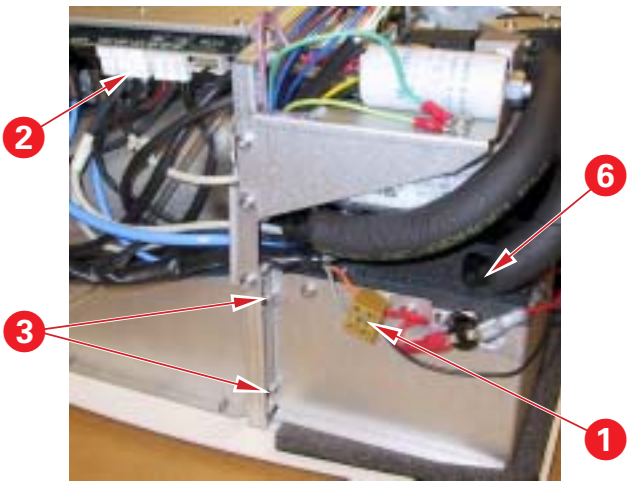
- To replace the filter in the water separator:
  - Disconnect the tube (3).
  - Unscrew the water separator housing (4).
  - The water separator filter (5) can now be replaced.

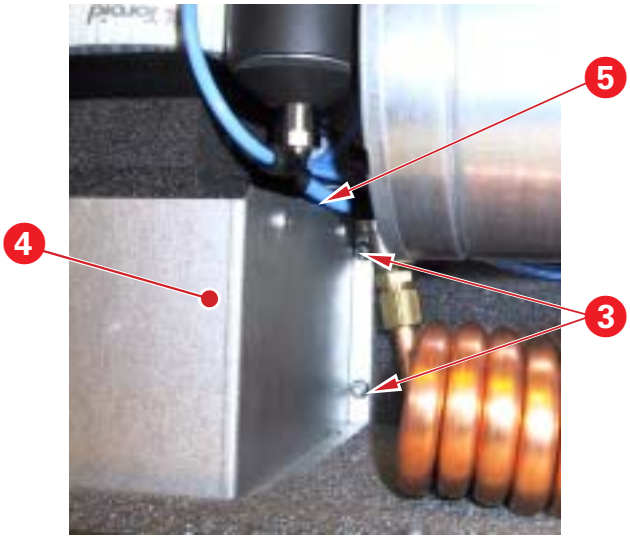


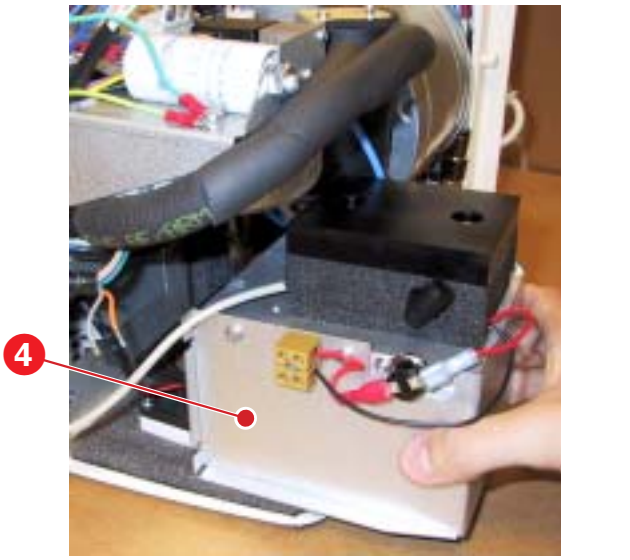
Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.

Note: Loctite 243 must be used on the screws (1).







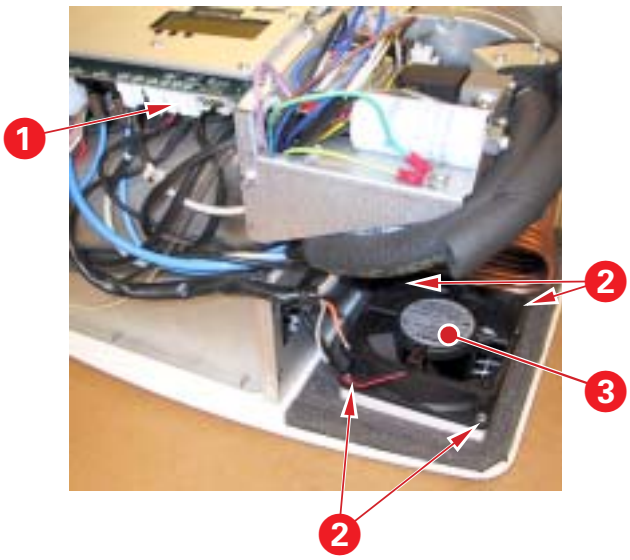
4.9 Thermoelectric cooler

Disassembling

- Remove the cover as described in section 4.4 'Compressor cover'.
- Disconnect the two cables at the terminal (1).
- Disconnect the connector P6 (2) at the PC board.
- Remove the four screws (3) and carefully pull out the thermoelectric cooler (4).
- Disconnect the tubings at the cooler inlet (5) and the cooler outlet (6).
- Lift off the thermoelectric cooler (4).

Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.



4.10 Axial fan

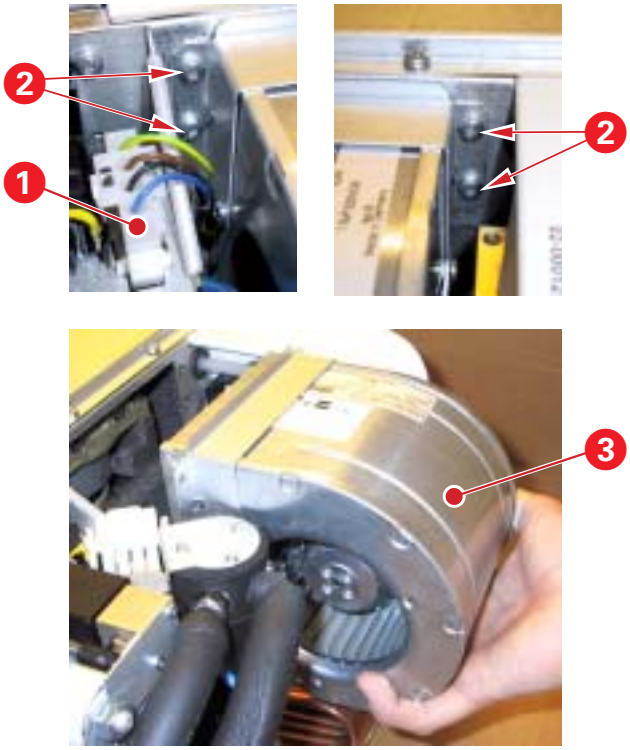
Disassembling

- Remove the thermoelectric cooler as described in section 4.9 'Thermoelectric cooler'.
- Disconnect the connector P2 (1) at the PC board.
- The cable is routed through a rubber bushing in the housing. Remove the rubber bushing from the housing and carefully pull the cable connector through the bushing.
- Remove the four screws (2) holding the axial fan.
- Lift off the axial fan (3).

Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.

Make sure that the direction of the air stream created by the fan is correct. The air must be drawn via the fan towards the cooling flanges. Refer to the 'Functioning block diagram'.



4.11 Radial fan

Disassembling

- Remove the cover as described in section 4.4 'Compressor cover'.
- Disconnect the cable connector (1).
- Remove the four screws (2) holding the radial fan.
- Carefully pull out and lift off the radial fan (3).

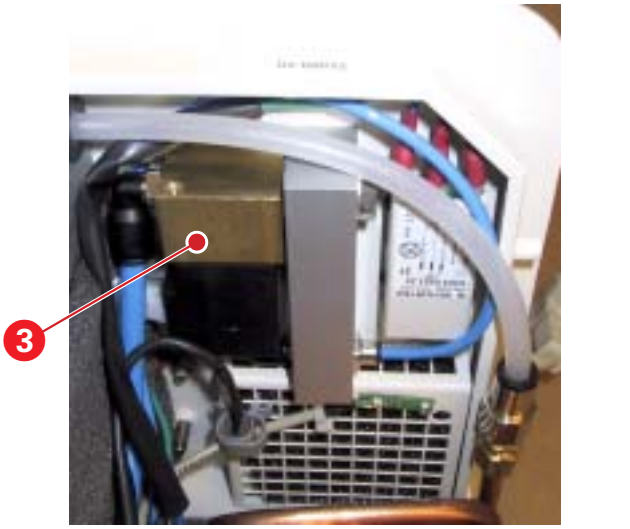
Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.

4.12 Standby valve

Disassembling

- Remove the radial fan as described in section 4.11 'Radial fan'.
- Remove the inlet and outlet air connection nipples (1 and 2).
- Disconnect tubings and cable connectors from the standby valve (3).
- Lift off the standby valve (3).



Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.

Note: The port marked 2 on the standby valve must be mounted towards the aluminum block.

Sealing compound (Loctite 542) must be used on the air connection nipple threads.

4

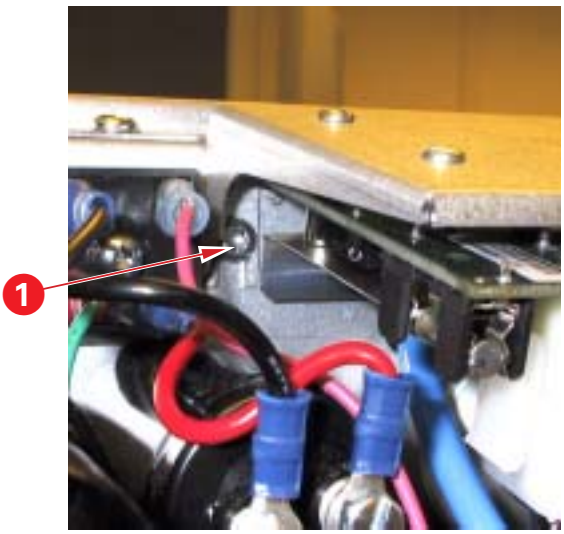
4.13 Drainage valve

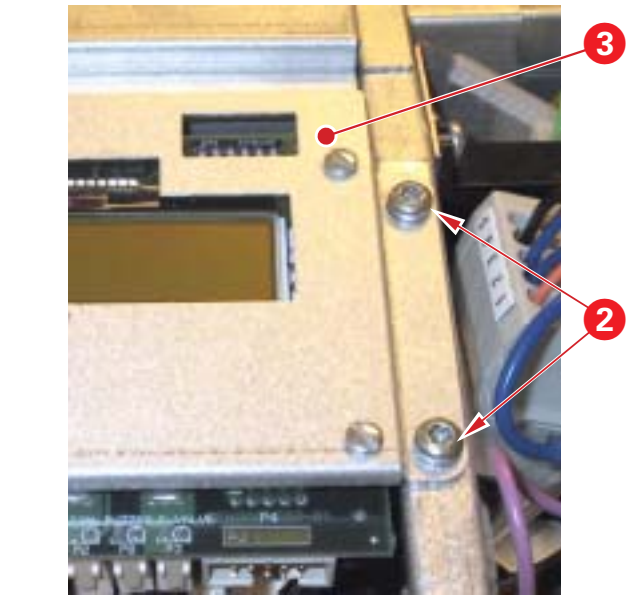
Disassembling

- Remove the cover as described in section 4.4 'Compressor cover'.
- Disconnect the connector P3 (1) at the PC board.
- Remove the two screws (2) holding the drainage valve (3).
- Disconnect all tubings from the drainage valve.
- Lift off the drainage valve.

Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.





4.14 PC board

Disassembling

- Remove the cover as described in section 4.4 'Compressor cover'.
- Disconnect all tubings and cable connectors from the PC board.
- Loosen the screw (1) a few turns.
- Remove the two screws (2).
- Lift off the PC board assembly (3).

Assembling

The assembling procedure is the reverse of the disassembling procedure as described above.

Spare part PC boards are delivered with the following settings:

- Factory calibrated pressure transducers.
- Time meter set to 0.
- kPa set as pressure unit.
- English set as language.

For pressure unit and language setting, refer to chapter 5. 'Service procedures', section 'Setting the DIP switch'.

When delivered as spare part, the SW is always stored on the PC board.

5. Service procedures

Before the compressor cover is removed, make sure that the mains power supply is disconnected and that the compressed air tank is depressurized.

With mains power supply connected to the unit, there are energized electrical components as well as moving mechanical parts inside the equipment. All personnel must exercise extreme caution when in the vicinity of this equipment if fault tracing or adjustments are performed with mains power supply connected and with the compressor cover removed.

After any service intervention in the Compressor Mini, perform a 'Function check' according to instructions in the User's Manual.

5.1 Transport safety lock

The Transport safety lock is mounted into the rear panel. The purpose of the transport safety lock is to secure and stabilize the compressor with motor e.g. during transport of the unit.

Remove the transport safety lock before starting the unit. Keep the transport safety lock parked on the drainage bottle holder when not in use.

To remove the transport safety lock

- Unscrew the transport safety lock (1) and pull it out.
- Park the transport safety lock on the drainage bottle holder.

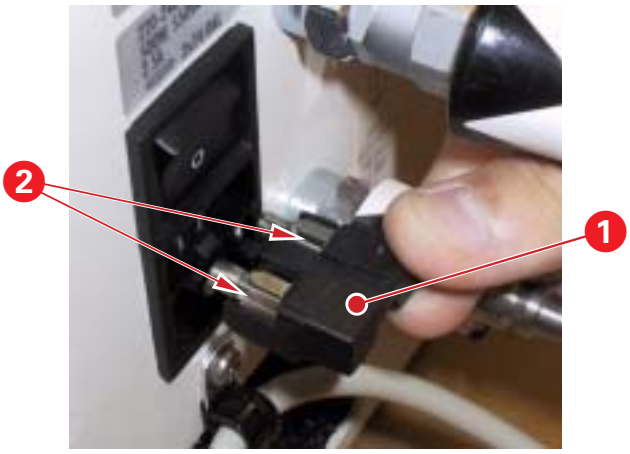
Do not discard the transport safety lock. It must be used during transport of the unit.

To refit the transport safety lock

The procedure for refitting the transport safety lock is the reverse of the removing procedure previously described.

5.2 Replacing / resetting fuses

Mains fuses F3/F4



There are two mains power fuses, F3 and F4, located at the mains power inlet.

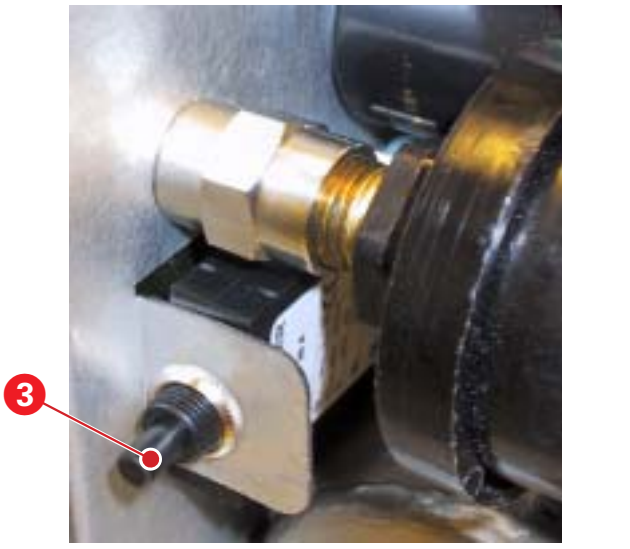
The value for the mains fuses is as follows:

- 115 V version ..... 8.0 AT, 250 V
- 230 V version ..... 4.0 AT, 250 V

To replace the fuses:

- Pull out the connector at the mains power inlet.
- Pull out the fuse holder (1).
- Replace the mains fuses (2).

Autofuse F2 20 A

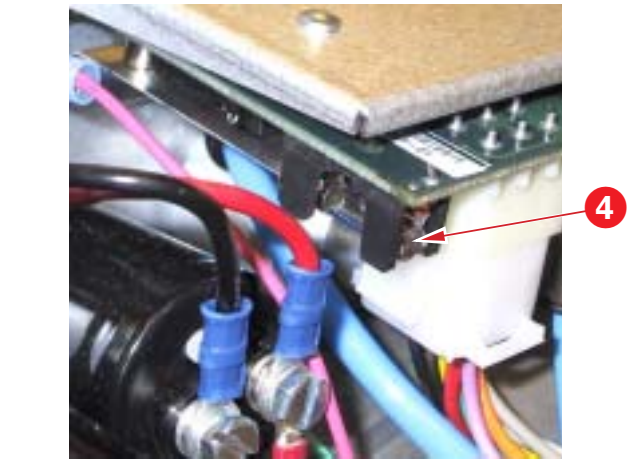


The Autofuse F2, rated 20 A, protects the units DC circuit.

To reset the fuse:

- Remove the cover as described in section 4.4 'Compressor cover'.
- Push the button (3) on the autofuse.

PC board fuse F1

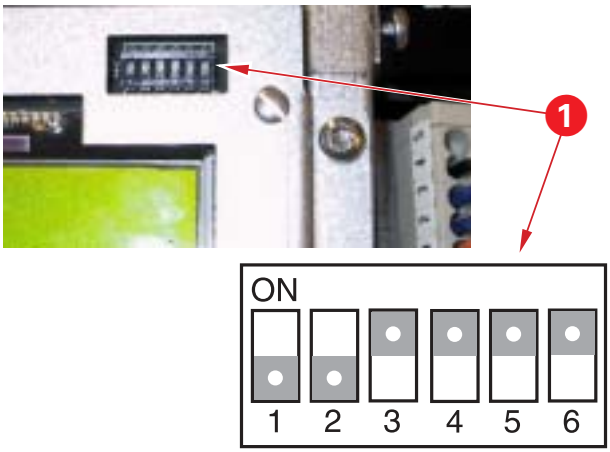


The fuse F1, rated 800 mAT, protects the PC board.

To replace the fuse:

- Remove the cover as described in section 4.4 'Compressor cover'.
- Replace the fuse (4).

5



SW1	SW2	SW3	SW4	SW5	SW6	
ON	–	–	–	–	–	N/A (Reset)
OFF	ON	OFF	–	–	–	Psi
OFF	OFF	ON	–	–	–	kPa
OFF	ON	ON	–	–	–	Bar
OFF	–	–	ON	OFF	OFF	Italian
OFF	–	–	OFF	ON	OFF	Swedish
OFF	–	–	ON	ON	OFF	German
OFF	–	–	OFF	OFF	ON	Not used
OFF	–	–	ON	OFF	ON	Spanish
OFF	–	–	OFF	ON	ON	French
OFF	–	–	ON	ON	ON	English
OFF	OFF	OFF	OFF	OFF	OFF	Service mode

5.3 Setting the DIP switch

The following settings are made with the DIP switch (1) on the PC board:

- Reset, SW1. Used for factory calibration of the PC board. Not intended for field service. Must remain in OFF-position.
- Pressure unit, SW2 – SW3. To select the pressure unit shown on the display.
- Language, SW4 – SW6. To select the language shown on the display.
- Service mode, SW1 – SW6. To show highest stored pressure reading and lowest/highest stored temperature reading. The service mode loop is shown in the flow chart below.
  Note: Make sure to set the appropriate pressure unit and language after using the service mode.

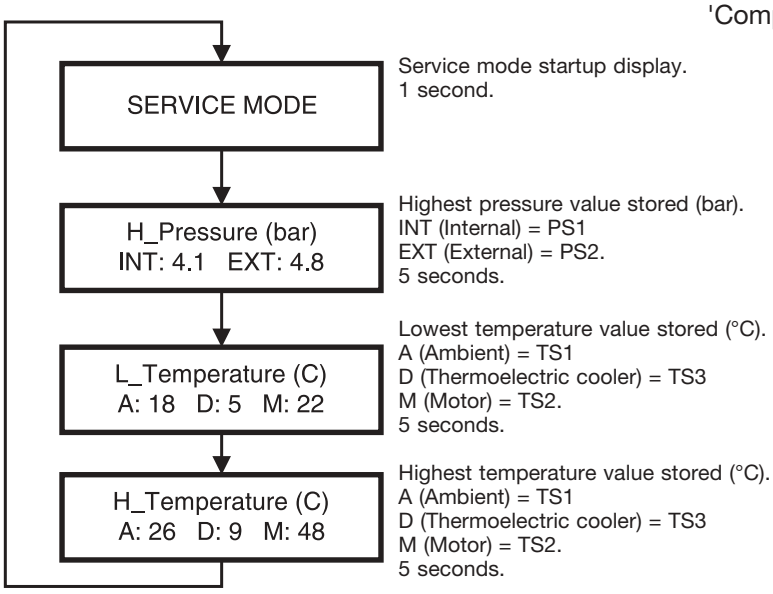
The adjacent DIP switch-illustration shows the following pressure unit and language settings:

– kPa (SW 2–3)

– English (SW 4–6).

Setting procedure

- Make sure that the Compressor Mini is switched Off.
- Remove the cover as described in section 4.4 'Compressor cover'.
- Set SW2 – SW6 to select appropriate pressure unit and language (or service mode).
- Start the Compressor Mini with the On/Off switch. Check that the selected settings are activated.
- Mount the cover as described in section 4.4 'Compressor cover'.



5

6. Troubleshooting

Before you start any troubleshooting, begin if possible by questioning the person reporting the fault. Ask how the fault appeared.

Make sure that there has been no operating error. For this purpose, see also the chapter 'Troubleshooting' in the User's Manual.

There should be a logical trend to your trouble-shooting. First try to trace the faulty function. Then the most suitable procedure is to track down the exact fault by systematically replacing individual spare parts, one at a time.

One purpose of the 'Description of functions' and the 'Diagrams' in this Service Manual is to make it easier to trace faults.

Before the compressor cover is removed, make sure that the mains power supply is disconnected and that the compressed air tank is depressurized.

With mains power supply connected to the unit, there are energized electrical components as well as moving mechanical parts inside the equipment. All personnel must exercise extreme caution when in the vicinity of this equipment if fault tracing or adjust-ments are performed with mains power supply connected and with the compressor cover removed.

After any service intervention in the Compressor Mini, perform a 'Function check' according to instructions in the User's Manual.

Malfunction	Action
The compressor will not start; the green On/Off-LED does not come on:	• Check the mains power supply. • Check fuses (F1, F2, F3 and F4). • Check all electrical cables and connectors. Tighten loose connectors. • Check voltage at the 26. DC Capacitor: – If the voltage is 11 – 16 V: Malfunction on the PC board. – If the voltage is 0 V: Malfunction in the transformer or rectifier.
The compressor runs, but the mains power LED does not come on:	• Replace the PC board.
No compressed air is delivered although the compressor is running:	• If the pressure shown on the display is normal, check the compressed air outlet for obstruction or damage and replace it if necessary. • If the pressure shown on the display is too low, check the internal compressed air tubing for leakage. Clear obstructions, tighten loose connectors. • Check the drainage valve and the standby valve. Replace if necessary. • Check the operation of the compressor. Overhaul or replace if necessary.
The compressor stops; the mains power LED stays on:	• Mains power below specified range. • Check the internal wiring and connectors. • The thermal switch inside the motor may have tripped. The thermal switch will reset automatically and the motor will restart.

Malfunction	Action
Operating pressure (shown on the display) is correct during functional check but drops when a ventilator is connected:	• Too high air consumption. The compressor cannot supply the equipment connected. • The dust filters or the air inlet filter are clogged. Clean or replace the filters if necessary. • Check the internal compressed air tubing for leakage. Clear obstructions, tighten loose connectors. • Check the operation of the compressor with motor. Overhaul or replace if necessary.
The 'Low pressure alarm' is activated:	• Too high air consumption. The compressor cannot supply the equipment connected. • Check the internal compressed air tubing for leakage. Clear obstructions, tighten loose connectors. • The dust filters or the air inlet filter are clogged. Clean or replace the filters if necessary. • Pressure alarm malfunction. Replace the PC board. • Check the operation of the compressor with motor. Overhaul or replace if necessary. • Malfunction in the pressure regulator.
The 'High pressure alarm' is activated:	• Pressure alarm malfunction. Replace the PC board. • Malfunction in the pressure regulator.
The 'Temperature alarm 1' is activated:	• Ambient air temperature is too high. • The compressor’s ventilation holes are blocked. Check cooling air inlet on the rear panel as well as cooling air outlet on the underside of the unit. • The compressor's dust filter is clogged. Clean or replace if necessary. • Check the operation of the radial fan. Replace if necessary. • Temperature alarm malfunction. Replace the PC board. • Malfunction in TS2 (temperature sensor 2).

Malfunction	Action
The 'Temperature alarm 2' or 'Temperature alarm 3' is activated:	• Ambient air temperature is too high. • The thermoelectric cooler's ventilation holes are blocked. Check cooling air inlet as well as cooling air outlet on the underside of the unit. • The thermoelectric cooler's dust filter is clogged. Clean or replace if necessary. • Check the operation of the axial fan. Replace if necessary. • Thermoelectric cooler malfunction. Replace the thermoelectric cooler. • Temperature control malfunction. Replace the PC board. • Temperature alarm malfunction. Replace the PC board. • Malfunction in TS1 (temperature sensor 1).
Abnormal amounts of water flush out through the drain valve when the valve pin is depressed:	• Check the internal water tubing. • Check the operation of water separator and the drainage valve. Overhaul or replace if necessary. • Malfunction in the thermoelectric cooler. Replace if necessary. • Malfunction on the PC board. Replace if necessary.
The display does not indicate the correct operating pressure:	• Check the internal compressed air tubing for leakage. Clear obstructions, tighten loose connectors. • Check the operation of the compressor with motor. Overhaul or replace if necessary. • Malfunction on the PC board. Replace if necessary.
Water appears to be leaking from the Compressor Mini:	• Check the drainage bottle for leaks or a loose connection. Replace the bottle if necessary. • Check all water tubes and connectors. Tighten loose connectors. • Check the water separator. Replace if necessary. • Check the drainage valve. Replace if necessary.
Water does not accumulate in the drainage bottle at regular intervals. Drainage is too frequent, not frequent enough, or does not occur at all:	• Check all water tubes and connectors. Clear obstructions and/or replace faulty components. • Check the water separator. Replace if necessary. • Check the drainage valve. Replace if necessary. • Malfunction on the PC board. Replace if necessary.

Before the compressor cover is removed, make sure that the mains power supply is disconnected and that the compressed air tank is depressurized.

With mains power supply connected to the unit, there are energized electrical components as well as moving mechanical parts inside the equipment. All personnel must exercise extreme caution when in the vicinity of this equipment if fault tracing or adjustments are performed with mains power supply connected and with the compressor cover removed.

Any service or maintenance must be noted in a log book.

All disposable parts must be discarded according to local regulations and in an environmentally acceptable way.

After any service intervention in the Compressor Mini, perform a 'Function check' according to instructions in the User's Manual.

7. Preventive maintenance

7.1 General

The Compressor Mini must be serviced at regular intervals by personnel trained and authorized by MAQUET. Any maintenance or service must be noted in a log book.

It is recommended that maintenance and service is done as a part of a service contract with MAQUET.

Preventive maintenance must be performed as follows:

- 5.000 hour overhaul when replacing filters.
- 10.000 hour overhaul when replacing filters, shock absorbers and overhauling the compressor.

Preparations

- Make sure that the Compressor Mini is properly cleaned before performing any maintenance. For cleaning procedures, refer to the User's Manual.
- Make sure that the Compressor Mini works properly before performing any maintenance.

Tools

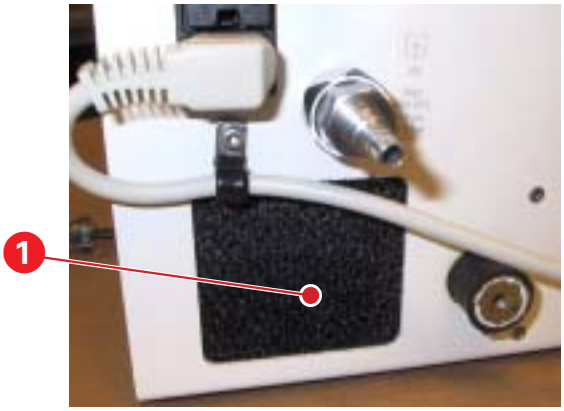
- Standard service tools.

7.2 5.000 hour overhaul

When performing the maintenance, a 'Maintenance kit, 5.000 hour' should be used.

For disassembling and assembling instructions, refer to chapter 4. 'Disassembling and assembling'.

- Replace the compressors dust filter (1).



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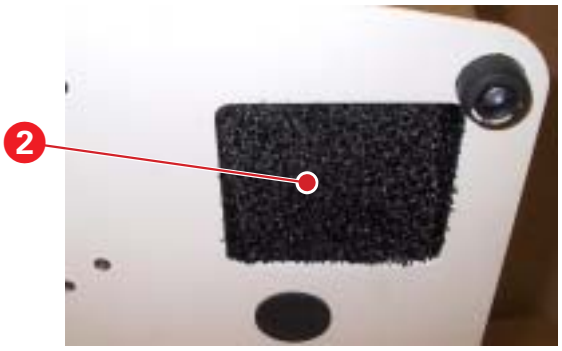
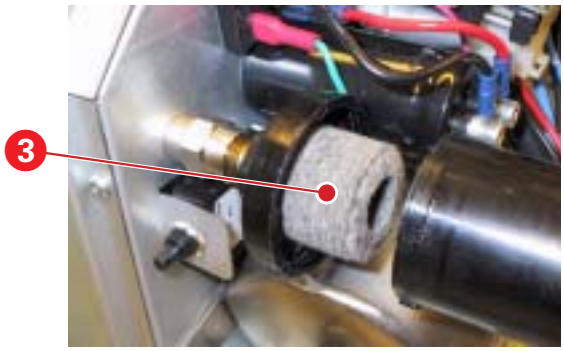
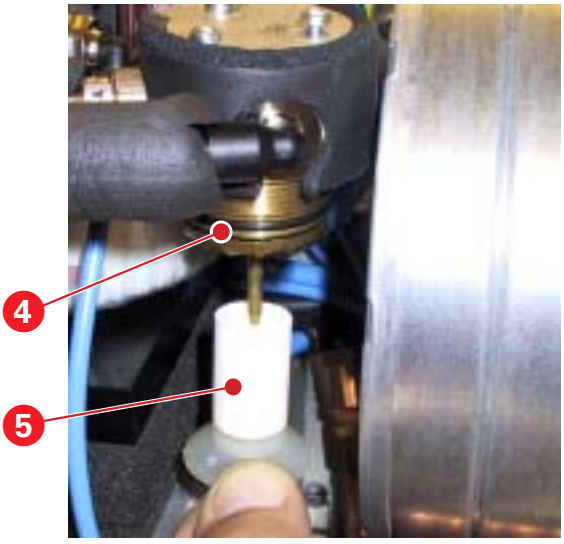


- Replace the thermoelectric coolers dust filter (2).



- Replace the air inlet filter (3).



- Replace the O-ring (4).
- Replace the water separator filter (5).

Safety inspection

- Make a visual inspection of the Compressor Mini for external defects or damages. Replace defective or damaged parts.
- Check the mains power cable and the mains power inlet for damage.
- Perform a leakage current test. The leakage current test is a standard procedure regulated by IEC 60 601-1 or corresponding national standards. Allowable values and test methods are defined in the standard. The use of a leakage tester, e. g. Bender Safety Tester 601/751 or equivalent is recommended.

Completing the 5.000 hour overhaul

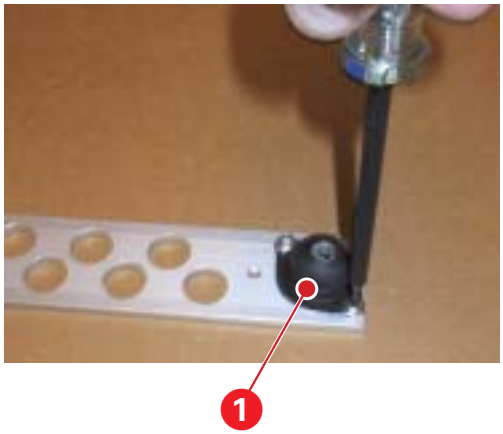
- Connect the test nozzle, provided as a service tool, to check the output pressure. An air pressure of 350 – 400 kPa (50 – 58 psi) indicated on the display shows that the compressor is operating correctly.
- Perform a 'Function check'. Refer to the User's Manual.
- Note in the units log book that a 5.000 hour overhaul has been performed.

7.3 10.000 hour overhaul

When performing the maintenance, a 'Maintenance kit, 10.000 hour' should be used.

For disassembling and assembling instructions, refer to chapter 4. 'Disassembling and assembling'.

- Replace the following parts as described in section 7.2 5.000 hour overhaul:
  - The compressors dust filter.
  - The thermoelectric coolers dust filter.
  - The air inlet filter.
  - The water separator filter.



- Replace the compressors shock absorbers (1).

- Perform an overhaul of the compressor. Detailed instructions are enclosed in the compressor maintenance kit.

Safety inspection

- Make a visual inspection of the Compressor Mini for external defects or damages. Replace defective or damaged parts.
- Check the mains power cable and the mains power inlet for damage.
- Perform a leakage current test. The leakage current test is a standard procedure regulated by IEC 60 601-1 or corresponding national standards. Allowable values and test methods are defined in the standard. The use of a leakage tester, e. g. Bender Safety Tester 601/751 or equivalent is recommended.

Completing the 10.000 hour overhaul

- Connect the test nozzle, provided as a service tool, to check the output pressure. An air pressure of 350 – 400 kPa (50 – 58 psi) indicated on the display shows that the compressor is operating correctly.
- Perform a 'Function check'. Refer to the User's Manual.
- Note in the units log book that a 10.000 hour overhaul has been performed.

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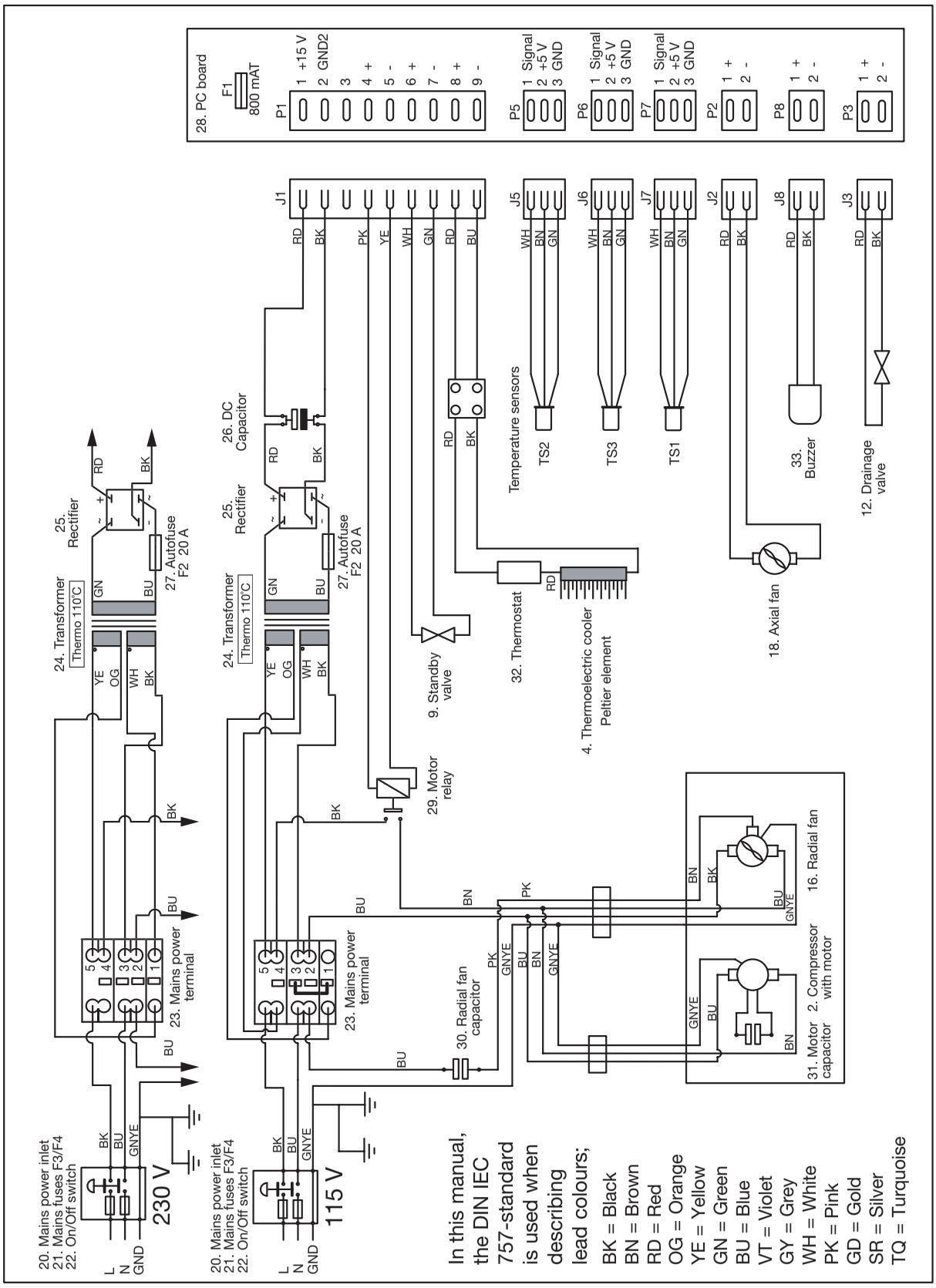
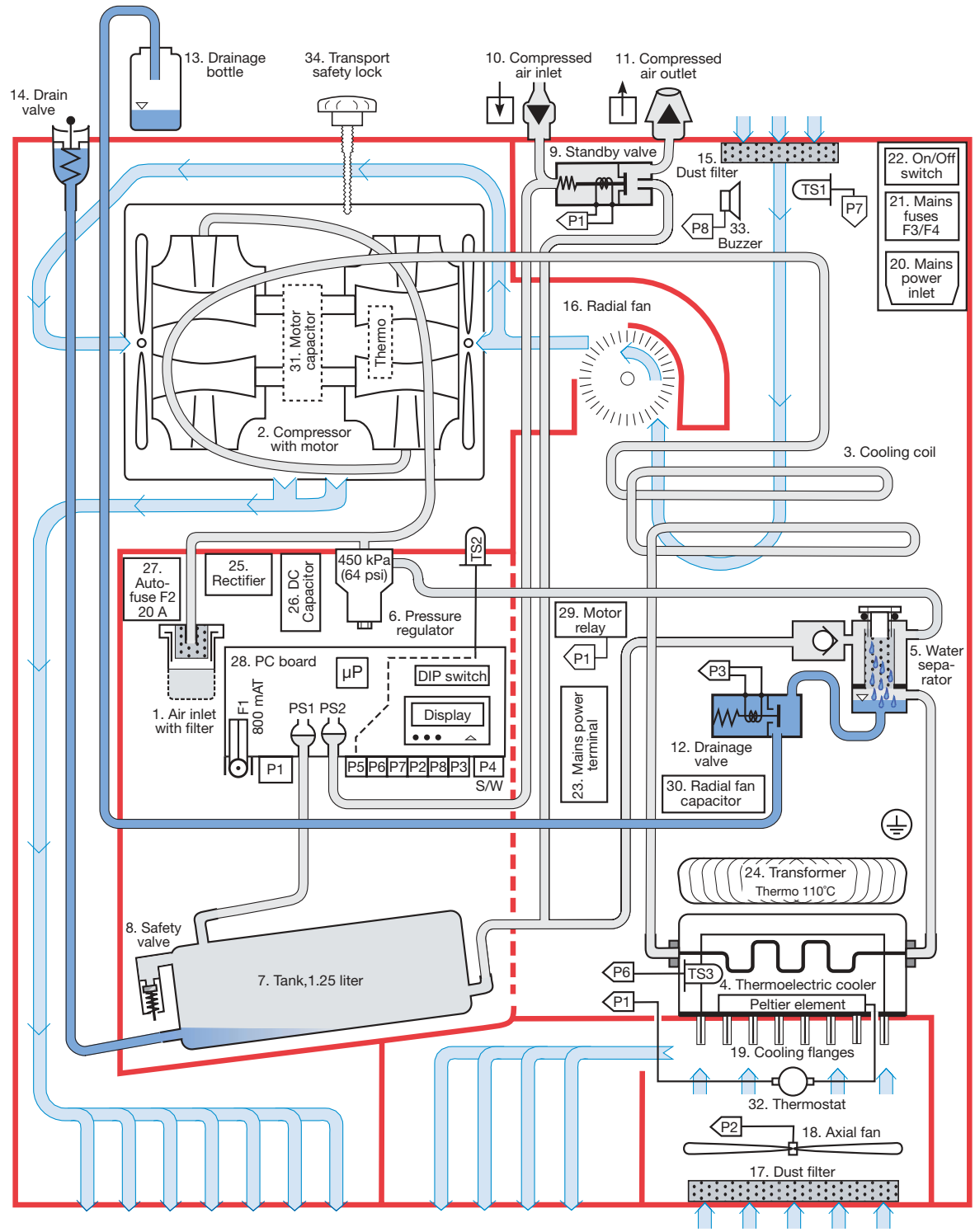
9. Diagrams

9.1 Wiring diagram



9.2 Functional block diagram



The position number on each component refers to the Description of functions in chapter 3.

Main functions	
1 - 14	Compressed air production
15 - 19	Compressor cooling
20 - 33	Electric functions
34	Transport safety lock

P#

Connected to PC bord socket #

- P1 Standby valve
- P2 Fan
- P3 Drain valve
- P4 S/W download
- P5 Motor temp. sensor
- P6 Cooler temp. sensor
- P7 Ambient air temp. sensor
- P8 Buzzer

TS#

Temperature sensor #

- TS1 Ambient air
- TS2 Motor
- TS3 Cooler

Cooling air
Air
Water

MAQUET

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